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A NEW MATERIAL FOR THE NAVY'S SERVICE DRESS BLUE UNIFORM

A LABORATORY WEAR TEST STUDY

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NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
NATICK, MASSACHUSETTS

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The Navy Clothing and Textile Research Facility (NCTRF) has developed a 55/45 polyester/wool, 11-oz/linear yard serge for use in Men's and Women's Service Dress Blue uniforms. Over 100 commercially available potential candidate fabrics were screened prior to the selection of 10 materials for wear-testing. Data gathered from this evaluation resulted in the development of three prototype fabrics. The fabrics consisted of two 55/45 polyester/wool, 11-oz serges of the same construction but manufactured by different sources. The

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third fabric was a 75/25 polyester/wool, 12-oz serge. Results of the laboratory evaluation and subsequent extended wear-testing of these materials indicated the 55/45 blend to be superior to the 75/25 blend. (U)

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A NEW MATERIAL FOR THE NAVY'S SERVICE DRESS BLUE UNIFORM:

A LABORATORY WEAR TEST STUDY

INTRODUCTION

The Navy Clothing and Textile Research Facility (NCTRF), at the request of the Naval Supply Systems Command (NAVSUP) and the Naval Uniform Board (NUB), has developed a medium weight fabric to replace both the 15-oz wool serge and the 10-oz polyester/wool tropical fabrics used in Men's Winter and Summer Service Dress Blue uniforms. The original objective was to develop a year-round uniform fabric that possessed improved appearance, comfort, durability, tailorability and was readily available at an economical cost. This project was later expanded to include replacement of the material used for the Women's Service Dress Blue uniform. The three prototype fabrics eventually developed under the program were subjected to an extended wear-test evaluation in a variety of men's and women's uniforms. Based on the result of this user evaluation, a 55/45 polyester/wool, 11-oz/linear-yard serge has been selected as the preferred fabric and is therefore being recommended for adoption as the new single weight material to be used in the manufacture of Men's and Women's Service Dress Blue uniforms. This report provides background information, a description of the material investigation and the wear-test evaluation, and a summary of the analysis of the wear-test questionnaires.

BACKGROUND

The proposal to perform this development had been presented to NAVSUP and NUB because world economic conditions and a shortage of natural fibers (wool) over the previous few years had combined to dramatically increase the cost of the current standard fabrics used in the manufacture of Service Dress Blue uniforms. This, in turn, substantially increased the cost of the total "bag items" issued to all new male recruits, since two uniforms, a summer and a winter, were being issued to each recruit. In addition, feedback information indicated that personnel were not very pleased with either type of the standard uniform. The winter uniform, fabricated of 15-oz wool serge, was considered heavy and hot except in very cold temperatures. The summer uniform, constructed of 10-oz tropical, was reported to present a poor appearance because of deficiencies in the hand (i.e., the feel of the fabric) and the drapeability of the lightweight fabric. Since then, both of these uniforms have been eliminated, but the 15-oz wool serge is still being used in the manufacture of the Men's 13-Button, Bell-Bottom, Service Dress Blue, uniforms. The 10-oz polyester/wool tropical is presently used in the manufacture of Women's Service Dress Blue uniforms, having replaced the 12-oz wool serge previously used.

Based on the information provided by us to NAVSUP, the following criteria were established as a guideline for developing a new material:

a. appearance
b. comfort
c. durability
d. tailorability
e. shade control
f. cost
g. continuing availability

MATERIAL INVESTIGATION

Initially, over 100 fabrics of various weights, weaves and fiber content were subjected to laboratory analysis for consideration as candidates for the program. Table I lists the various tests that were performed on each of the materials. The types of fabrics that were evaluated included: (a) 100% texturized polyester warp knits; (b) 100% texturized polyester double knits; (c) 100% texturized polyester "stretch" wovens; (d) 100% woven polyester, consisting of a combination of texturized and spun yarns; (e) polyester/wool, consisting of a combination of texturized and spun yarns; (f) polyester/wool fabrics of various blends and weight levels. The blend level was limited to a maximum wool content of 45% for economic reasons.

As a result of this laboratory evaluation, nine fabrics were selected for preliminary wear testing in the form of men's trousers. Instead of complete uniforms (coat and trousers), only trousers were manufactured, because they cost less and are worn much more frequently than the complete uniform, thereby yielding better data. These fabrics included:

a. 100% texturized polyester, 11.0 oz, serge

b. 85/15 polyester/wool, combination texturized and spun yarns, 10.0 oz, gabardine

c. 85/15 polyester/wool, combination texturized and spun yarns, 11.0 oz. serge

d. 75/25 polyester/wool, 10.5 oz, tropical

e. 75/25 polyester/wool, 13.0 oz, serge

f. 100% polyester, combination texturized and spun yarns, 11.0 oz, gabardine

g. 55/45 polyester/wool, 9.5 oz, gabardine

h. 55/45 polyester/wool, 12.0 oz, serge

i. 55/45 polyester/wool, 14.0 oz, serge

(NOTE: For purposes of comparability, all weights have been converted to ounces per linear yard, based on a 56-inch width.)

The trousers were distributed to personnel stationed at RTC, Orlando, FL; RTC, Great Lakes, IL; and RTC, San Diego, CA. This preliminary evaluation was spread over a period from September 1976 to January 1978, since selection of the above fabrics and manufacture of the test trousers were performed over a period of time and not simultaneously.

Data gathered from this initial wear evaluation served as the basis for arriving at the following findings and conclusions.

TABLE I. TEST PROCEDURES FOR CANDIDATE MATERIALS

Physical Characteristics	Fed. Standard Test Method 191	Special Tests	Test Procedure
Weight	5041	Pilling	1*
Threads per inch	5050	Snagging	2*
Break Strength	5100	Frosting	3*
Tear Strength	5132	Shine	4*
Shrinkage	5558	Wrinkle Recovery	5*
Air Permeability	5450	Soil Release	6*

*Procedures for Special Testing

1. The test is performed in accordance with A.S.T.M. D1375-72, and the Custom Scientific brush pilling tester is utilized. Exposure time is 5 minutes for the fabric-to-brush portion of the test, and 5 minutes for the fabric-to-fabric portion of the test. The samples are evaluated by means of comparison to a set of standards developed at NCTRF.

2. The ICI Mace snag tester is used. The same is exposed to 600 cycles and evaluated by means of the ICI photographic standards.

3. A test of color change due to frosting is performed in accordance with American Association of Textile Chemists and Colorists (AATCC) T.M. 120-1970. Two samples are prepared. One is run for 100 cycles and the other for 1000 cycles in order to check abrasion resistance as well.

4. The Wyzenbeek oscillatory cylinder is used. A 5-inch by 10-inch specimen is mounted on the drum. Three 1.5-inch by 9-inch strips serve as the abradants. The first abradant is a strip of the fabric being tested; the second is a strip of No. 6 hard textured cotton duck, conforming to Type I of CCC-C-419; the third is a strip of vinyl-coated cotton, single jersey knit fabric, conforming to NCTRF/PD-2-71, run with the vinyl coating face down. The specimen is exposed for 1000 cycles and then evaluated for the degree of shine imparted on a scale from excellent (no perceptible shine) to poor (objectionable shine).

5. Wrinkle recovery is performed in accordance with AATCC T.M. 128-1970.

6. The test is performed by soiling the specimen as outlined in AATCC T.M. 130-1970, except that French salad dressing is used instead of Nujol. After removal of the weight and glassine paper, the specimen is allowed to sit, undisturbed, for a minimum of 4 hours before being dry cleaned. The specimen is then dry cleaned as described in Federal Standard 191, T.M. 5622.3, except that the sample size is 8 inches x 8 inches, the 8 x 3-1/2 stainless steel cylindrical container is utilized, and 150 ml. of solvent is used. The specimen is evaluated as outlined in AATCC T.M. 130-1970.

Samples which were exposed to the above special testing procedures were rated on a scale from 1 to 5 as follows:

5--Excellent; 4--Good; 3--Acceptable; 2--Fair; 1--Poor

1. Fabrics constructed from 100% polyester (either texturized or spun yarns) were discounted from future consideration because of their deficiencies in the critical areas of shade control, stain resistance, cleanability, susceptibility to pilling (formation of small balls of fiber on the surface of the fabric), snagging (pulled threads), tailorability, comfort, and durability.

2. The results disclosed that a minimum of 25% wool content was necessary to derive any worthwhile benefit from wool being present in fabric blends.

3. The results also indicated that it is nearly impossible for a single fabric to provide a satisfactory degree of comfort in all types of climates. The 9.5-to-10.5-oz. materials were considered as not providing enough warmth in winter climates, while the 12-to-14-oz. materials were considered too hot for summer wear.

4. Data showed that none of the nine materials evaluated possessed all of the desired characteristics previously defined.

As a result, NCTRF, with the cooperation of two fabric manufacturers, developed three experimental fabrics designed to come as close as possible to meeting the program's objectives. These were:

a. Serge, 55/45 polyester/wool, 11.0 oz.

b. Serge, 55/45 polyester/wool, 10.7 oz., same construction as fabric (a) but manufactured by a different source.

c. Serge, 75/25 polyester/wool, 11.5 oz.

A weight of 11 to 12 ounces was established as the nearest to satisfying the multiple-climate-comfort requirement. A serge construction was selected over a gabardine because of the shine factor associated with wearing the latter. The shine becomes prominent after repeated wearing and pressing of the garment. A tropical (plain) weave was not selected because this type of fabric does not provide the same degree of warmth, drapability and good overall appearance as a serge (twill).

LABORATORY TEST RESULTS

Laboratory results indicate that the physical characteristics of the three experimental materials are quite similar and, for the most part, highly satisfactory. There were, however, a few discrepancies which should be discussed.

10.7 oz., 55/45 Serge

This material was shown to possess a somewhat lower breaking strength, higher degree of shrinkage and greater air permeability than the other two fabrics. It is suspected that these deficiencies are due to poor finishing of the goods. It appears as if the fabric tension was set too high during finishing. None of the above deficiencies, however, were considered serious, since no adverse effects were experienced in either the subsequent fabrication or wear-testing of the garments manufactured from this fabric.

75/25 Serge

Laboratory results indicate that this blend was somewhat inferior to the two 55/45 blends in the areas of pilling and shine.

The test for degree of shine was developed primarily for use in comparing one fabric type against another, i.e., gabardine vs. serge. Consequently, very little difference in shine was observed among the three experimental fabrics. The 75/25 blend was judged to be slightly less favorable than the two 55/45 blends. No problems with shine, however, were reported during the subsequent wear-testing of this material.

Because of the high polyester-to-wool ratio, it had been feared this fabric would be susceptible to pilling. Laboratory testing indicated that the fabric was somewhat more susceptible to pilling than the two 55/45 blends. This pilling, however, was not considered excessive and occurred only in wear-test garments fabricated from the 75/25 blend which had been subjected to a great deal of wear. This finding is further discussed in the wear-test section of the report.

RESULTS OF WEAR TESTS

An evaluation questionnaire was given to each test subject which contained questions based on the acceptability of the comfort, appearance, and condition of the garments after extended wear. Of the 360 questionnaires distributed, 190 (53%) were returned. Appendix A provides a tabulation of the responses to the questionnaire for each type of uniform.

Men's 13-Button, Service Dress Blue, Bell-Bottom Uniform

Thirty-five uniforms of the 11-oz, 55/45 blend and 30 of the 75/25 blend, which were manufactured and distributed to crew members of the USS CONSTITUTION, were tested from February 1979 to April 1979.

While on duty, the 65 test subjects wear the 1812 attire of the "Old Ironsides" era. Consequently, the experimental uniforms were worn only during off-duty hours, while on liberty. A total of 48 (74%) of the test subjects returned the questionnaires. Most of the test subjects considered both blends warmer than their normal off-duty clothing. It should be noted, however, that the average temperature reported during the wear test was 55°F. Most considered both experimental fabrics to perform satisfactorily in regard to wrinkling and general appearance after extended wear and dry cleaning. There was virtually no difference in preference when each of the experimental blends was compared with what is normally worn. Specifically, 50% preferred the 55/45 blend over the optional double knit uniforms (30%), the standard serge (10%), and the tropical (10%). The 75/25 blend (47%) was preferred over the double knit (36%), the standard serge (13%), and the men's tropical (4%).

Men's Service Dress Blue Trousers

One-hundred twenty-five pairs of the 10.7-oz, 55/45 blend, which were manufactured and distributed to personnel stationed at Officer Candidate School (OCS), Newport, RI, were tested from September 1978 to December 1978.

The 55/45 polyester/wool, 10.7-oz serge was used to manufacture all of these trousers since the other two experimental materials were not available at the time. The test group was composed mostly of officer candidates who were wearing Navy clothing for the first time. Consequently, the test was more one of wearer acceptance than one of comparison. A total of 39 of 125 (31%) test subjects returned the questionnaires. Our selection of this test group met with little success for a number of reasons, mostly their heavy schedule. This left little time for them to alter and dry clean the trousers, fill out questionnaires, etc. Only a few of the test subjects (five), personnel permanently stationed at OCS, Newport, were able to perform the wear test in the proper fashion. The experimental trousers were considered more or less equal in comfort when compared with the trousers normally worn by the test subjects (standard serge). However, the subjects concluded that the experimental trousers retained a better appearance than the standard serge after repeated wear and dry cleaning. The results indicate that 53% preferred the experimental trousers over the standard serge (27%), the optional double knit (15%), and other fabrics (5%).

Men's Double-Breasted Service Dress Blue Uniform

Seventy uniforms of the 11-oz, 55/45 blend and 60 of the 75/25 blend were manufactured and distributed to members of various Navy bands, which included: Newport, RI; Washington, DC; Charleston, SC; Memphis, TN; and Orlando, FL. The uniforms were tested from November 1978 to May 1979.

The majority of these uniforms were worn by members of various Navy bands. It should be noted that we found Navy band members to be an excellent source for testing of dress uniforms, since this group of enlisted personnel wear a uniform more often than the average sailor. An additional 25 uniforms, mostly of the 55/45 blend, were wear tested by personnel stationed in the Washington, DC, area. A total of 82 of 130 (63%) of the test subjects returned the questionnaires. The questionnaires show that the garments were worn an average of 38 days. This seemingly low average occurred because the Washington, DC, personnel, at most, wore the experimental uniform but once a week.

Results of this evaluation indicated that the majority considered both experimental fabrics somewhat on the warm side, but not objectionably warm. The test subjects, a majority of which normally wear double knits, considered both experimental fabrics prone to wrinkling. It may be stated that band members are generally more concerned about the appearance of their uniform (and thereby more critical) than is the average sailor. Most gave a favorable response to the overall condition of the uniform's appearance after extended wear and repeated dry cleanings. As was the case with the women, however, some of the test subjects complained of excessive lint pickup, particularly those who had worn the 75/25 blend. As previously stated, this condition should be minimal once the fabric has been worn and dry cleaned several times. Inspection of the worn garments also revealed that the 75/25 material had pilled somewhat. This characteristic appeared only in these uniforms, because they were worn more frequently than at the other test sites. Our laboratory analysis of the material had indicated that the 75/25 blend would be susceptible to pilling, but only with prolonged wear.

Both experimental fabrics were preferred over those normally worn, but the double knit was a close second, particularly against the 75/25 blend. Specifically, 46% preferred the 55/45 blend over the optional double knit (24%), the standard serge (13%), the tropical (9%), and other fabrics (8%). The 75/25 blend (37%) was preferred over the double knit (30%), the standard serge (21%), and the standard tropical (12%).

Women's Service Dress Blue Uniform

Twenty uniforms (shirt, slacks and coat) of the 11-oz, 55/45 blend and 20 of the 75/25 blend, manufactured and distributed to personnel stationed at RTC, Orlando, FL, and Navy Education Training Center (NETC), Pensacola, FL, and to several Navy band personnel were tested from November 1978 to May 1979.

Twenty uniforms (shirt, slacks and coat) of each blend were distributed. Because enlisted women are issued the standard tropical uniforms, most were using that fabric as a comparison to the experimental fabrics. A total of 21 of 40 (53%) test subjects returned the questionnaires. It may appear from the questionnaires that the uniforms were not worn very often (average of 22 times). However, test subjects were instructed to combine each time they

wore the skirt and the slacks as one wearing of the uniform instead of two. Both experimental fabrics were rated as being warmer to wear than the tropical during the performance of duties. The test subjects did not judge either fabric to be objectionably warm, however, considering the average temperature during the wear test period was 70°F. The 75/25 blend was rated as warmer than the 55/45 blend.

The major complaint was in the area of lint pickup, particularly with the 75/25 blend. This problem usually becomes less severe the longer the garment is worn and dry cleaned, since the rough surface of the fabric is the main cause of lint pickup. At this point, the fabric's surface becomes smooth enough to make lint pickup minimal. The test garments were considered to maintain a relatively good appearance after extended wear and multiple dry cleanings. There was a distinctive preference for the experimental uniform over the uniforms usually worn. Specifically, 55% of the personnel preferred the 55/45 blend over the optional double knit (36%) and the tropical (9%). The 75/25 blend (55%) was preferred over the double knit (30%) and the tropical (15%).

DISCUSSION

Comfort

Compilation of the individual responses pertaining to comfort revealed that the 55/45 blends were found to provide a greater degree of comfort in various climates than did the 75/25 blend. Many of the test subjects, particularly those located south of the Washington, DC, area, considered the experimental fabrics to be somewhat on the warm side. On the other hand, the bulk of the test subjects who found the test uniforms to be cool were stationed in the Northeast. Consequently, based on these responses, it may be concluded that the employment of one material for use in various climates is only a compromise that makes the wearer warm in hot climates and cool in cold climates. We feel that the experimental fabrics would provide the greatest comfort during the months of October to May.

Appearance

The three experimental fabrics were consistently rated as being less prone to wrinkling than either the standard serge or standard tropical. The few negative comments were usually received from those who normally wear the optional double knit uniforms, since this material is inherently wrinkle resistant. The test subjects also indicated that lint pickup was a problem with the first wearings of the experimental materials. This is a characteristic generally associated with a serge-type material because its fuzzy surface tends to hold particles. The Blue 3346 shade enhances this problem by providing a dark background for the light lint. As discussed earlier in this report, however, the lint problem can be minimized after two or three dry cleanings. Consequently, it is felt that any one of the experimental fabrics can provide a uniform of better overall appearance than the present standard materials.

Durability

Inspection of the worn garments by NCTRF disclosed that both 55/45 blends showed no signs of wear while the 75/25 blend was susceptible to pilling when subjected to extended wear. It should be noted that the pilling was found to have occurred only on the uniforms which had been worn quite frequently (over 50 times). This confirmed our earlier laboratory findings which had indicated a susceptibility to pilling, but only when the sample was subjected to a prolonged abrasion cycle (e.g., 30 min. vs. 5 min. normal cycle). Consequently, since the 55/45 blend showed no signs of wear either in the laboratory or during the wear test, this blend should provide a highly durable uniform capable of maintaining an excellent appearance over an extended period of time.

Tailorability

Garment manufacturers indicated that there were no problems encountered. While working with any of the experimental materials, test subjects also indicated that little difficulty was encountered in performing any alternations. Based on these comments, it may be assumed that uniforms manufactured from any of the experimental materials can be easily tailored. This is an important factor when one considers the steadily rising costs and time involved in tailoring.

Shade Uniformity

Because the top-dyeing procedure (the fibers are dyed to the proper shade prior to being spun into yarn for weaving) was used for all experimental fabrics (as opposed to piece dyeing, in which goods are dyed in fabric form), problems with shade uniformity from piece to piece and lot to lot should be minimal. In addition, since the uniforms must be dry cleaned and dry cleaning generally produces less color loss than laundering, a greater degree of color stability over an extended period of time should be experienced than if the uniforms were laundered.

Cost Savings

The approximate cost (as of February 1980) of producing each of the experimental fabrics is:

Serge, 55/45 polyester/wool, 10.7 oz and 11.0 oz	$7.05/yd
Serge, 75/25 polyester/wool, 11.5 oz	$5.75/yd

The approximate cost (as of February 1980) of producing each of the standard fabrics is:

Serge, 100% wool, 15 oz	$9.50/yd
Tropical, 55/45 polyester/wool, 10 oz	$6.00/yd

Thus, the experimental fabrics are considerably lower in cost than the standard 100% wool serge and quite comparable in cost with the standard, 55/45 polyester/wool tropical. The lower price advantage of the tropical is more than offset by its deficiencies in hand and in drapability and by the general dissatisfaction with the fabric which was expressed by the test subjects. Replacement of the standard 100% wool serge with the experimental 55/45 blend in the manufacture of Men's Service Dress Blue uniforms would produce an estimated annual savings of $8.50 per recruit, ($850,000 based on 100,000 recruits per year). Replacement of the standard 55/45 polyester/wool tropical with the experimental 55/45 polyester/wool serge would increase the cost of the Women's Service Dress Blue uniform by approximately $4.00 per recruit ($16,000 per year based on 4,000 recruits per year).

CONCLUSIONS

1. The use of one material in various climates makes the wearer warm in hot climates and cool in cold climates.

2. The three experimental fabrics would provide the greatest comfort during the months of October to May.

3. The three experimental fabrics wrinkle less than either the standard serge or the standard tropical.

4. The experimental fabrics can provide a more attractive uniform than the present standard materials.

5. The 55/45 polyester/wool blends showed no signs of wear, while the 75/25 polyester/wool blend was susceptible to pilling when subjected to extended wear, thus confirming our earlier laboratory findings.

6. Uniforms manufactured from any of the experimental materials can be easily tailored.

7. Problems with shade uniformity from piece to piece and lot to lot should be minimal, because the top-dyeing procedure was used for all experimental fabrics.

8. A greater degree of color stability should be maintained over an extended period of time, because the uniforms must be dry cleaned rather than laundered.

9. Based on February 1980 figures, the use of the 55/45 polyester/wool, 11-oz serge material for both the 15-oz wool serge used in the Men's Service Dress Blue Uniforms and the 10-oz polyester/wool tropical in the Women's Service Dress Blue Uniforms would save $834,000 annually.

RECOMMENDATION

Based on the results of extensive service testing, laboratory analysis, and cost and logistics studies, NCTRF recommends adoption of the 55/45 polyester/wool, 11-oz serge material as a replacement for both the 15-oz wool serge used in Men's 13-Button, Service Dress Blue, Bell-Bottom uniforms and the 10-oz, 55/45, polyester/wool tropical used in Women's Service Dress Blue uniforms.

APPENDIX A

QUESTIONNAIRE DATA

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO

20:RW:jl
29-001-44

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF MEN'S SERVICE DRESS BLUE UNIFORM

NAME/RATE 55/25, polyester/wool, 11 oz. 74% response (48/65)

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JUMPER SIZE WORN _____

TROUSER SIZE WORN: WAIST _____ INSEAM _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN 55

	1-5	5-10	10-15	Over 15	Avg.
NUMBER OF DAYS THE GARMENT WAS WORN	15%	15%	10%	60%	26

	0-5	5-10	Over 10	Avg.
NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	100%	0%	0%	3

1. Indicate how you like the experimental uniform's general fit and comfort:

Excellent	Very Good	Good	Fair	Poor
	25%	25%	50%	

2. Indicate how comfortable the experimental uniform was to wear while performing duties:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
	50%	33%	17%	

3. Indicate the extent of wrinkling of the experimental uniform:

Excellent	Very Good	Good	Fair	Poor
	25%	15%	50%	10%

4. Indicate the condition of the uniform relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
_____	60%	25%	15%	____

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
_____	30%	60%	10%	____

6. What type of dress uniform do you usually wear?

Standard Tropical 25% Standard Serge 40%

Double Knit 40% Other _____

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 10% Standard Serge 10%

Double Knit 30% Experimental Uniform 50%

Other _____

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO

20:RW:jl
29-001-44

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF MEN'S SERVICE DRESS BLUE UNIFORM

NAME/RATE 75/25, polyester/wool, 11.5 oz. 52% response (34/65)

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JUMPER SIZE WORN _____

TROUSER SIZE WORN: WAIST _____ INSEAM _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN 55

NUMBER OF DAYS THE GARMENT WAS WORN	0-5	5-10	10-15	Over 15	Avg.
	15%	15%	10%	60%	25

NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	0-5	5-10	Over 10	Avg.
	100%	0%	0%	3

1. Indicate how you like the experimental uniform's general fit and comfort:

Excellent	Very Good	Good	Fair	Poor
	25%	27%	48%	

2. Indicate how comfortable the experimental uniform was to wear while performing duties:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
	57%	26%	17%	

3. Indicate the extent of wrinkling of the experimental uniform:

Excellent	Very Good	Good	Fair	Poor
	32%	21%	40%	7%

4. Indicate the condition of the uniform relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
_____	45%	22%	23%	____

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
_____	32%	51%	17%	____

6. What type of dress uniform do you usually wear?

Standard Tropical 25% Standard Serge 42%

Double Knit 38% Other _____

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 4% Standard Serge 13%

Double Knit 36% Experimental Uniform 47%

Other _____

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO
20:RW:jl
29-001-41

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF MEN'S SERVICE DRESS BLUE TROUSERS

NAME/RATE 55/45, polyester/wool, 10.7 31% response (39/125)

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

TROUSER SIZE WORN: WAIST _____ INSEAM _____

IDENTIFICATION NUMBER ISSUED FOR TROUSERS _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN TROUSERS WERE WORN 50

NUMBER OF DAYS THE TROUSERS WERE WORN	1-5	5-10	10-15	Over 15	Avg.
	22%	13%	5%	60%	24.5

NUMBER OF TIMES THE TROUSERS WERE DRYCLEANED	0-5	5-10	Over 10	Avg.
	55%	32%	13%	5

1. Indicate how you like the experimental trousers' general fit and comfort as compared to your regular dress trousers:

   Excellent 19.1% Very Good 47.6% Good 19.1% Fair 9.5% Poor 4.7%

2. Indicate how comfortable the experimental trousers were to wear while performing duties as compared to your regular dress trousers:

   Hot 0% Warm 23.9% Same 42.4% Cool 28.6% Cold 4.8%

3. Indicate the extent of wrinkling of the experimental trousers as compared to your regular dress trousers:

   Excellent 18.2% Very Good 36.4% Good 31.9% Fair 9.1% Poor 4.6%

4. Indicate the condition of the experimental trousers relative to their appearance after extended wear and repeated dry cleanings:

   Excellent 33.3% Very Good 38.9% Good 22.3% Fair 0% Poor 5.5%

5. Indicate the condition of the experimental trousers relative to their fit after dry cleaning and pressing:

   Excellent 18.7% Very Good 37.4% Good 37.4% Fair 0% Poor 5.5%

6. What type of dress trousers do you usually wear?

Standard Tropical 5% Standard Serge 65% Double Knit 20% Other 10%

If other, specify: _____

7. Given your choice, what type of dress trousers would you prefer?

Standard Tropical _____ Standard Serge 27%

Double Knit 15% Experimental Trousers 53% Other 5%

If other, specify: _____

8. Estimate how long trousers were worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress trousers you generally wear and the experimental trousers you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

10. The completed questionnaire should be returned to:

Officer in Charge
Navy Clothing and Textile Research Facility (Code 20) (Mr. R. Wojtaszek)
21 Strathmore Road
Natick, MA 01760

Signed _____ Date _____
(Name of Test Subject)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO
20:RW:jl
29-001-41

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF MEN'S DOUBLE-BREASTED SERVICE DRESS BLUE UNIFORM

NAME/RATE 75/25, polyester/wool, 11.5 oz.

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JACKET SIZE WORN: _____

TROUSER SIZE WORN: WAIST _____ INSEAM _____

SHIRT SIZE WORN: NECK _____ SLEEVE LENGTH _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN _____

	1-5	5-10	10-15	Over 15	Avg.
NUMBER OF DAYS THE GARMENT WAS WORN	15%	16%	27%	42%	37

	0-5	5-10	Over 10	Avg.
NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	55%	35%	10%	5

1. Indicate how you like the experimental uniform's general fit and comfort as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
_____	25%	43%	20%	17%

2. Indicate how comfortable the experimental uniform was to wear while performing duties as compared to your regular uniform:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
3%	41%	51%	5%	_____

3. Indicate the extent of wrinkling of the experimental uniform as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
12%	20%	31%	22%	15%

4. Indicate the condition of the uniform, relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
5%	30%	43%	15%	7%

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
8%	34%	45%	13%	

6. What type of dress uniform do you usually wear?

Standard Tropical 22% Standard Serge 35%

Double Knit 37% Other 6%

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 12% Standard Serge 21%

Double Knit 30% Experimental Uniform 37%

Other _____

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO

20:RW:j1
29-001-41

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF MEN'S DOUBLE-BREASTED SERVICE DRESS BLUE UNIFORM

NAME/RATE 55/45 polyester/wool, 11 oz. 63% response (82/130)

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JACKET SIZE WORN: _____

TROUSER SIZE WORN: WAIST _____ INSEAM _____

SHIRT SIZE WORN: NECK _____ SLEEVE LENGTH _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN _____

NUMBER OF DAYS THE GARMENT WAS WORN	1-5	5-10	10-15	Over 15	Avg.
	10%	15%	30%	45%	39

NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	0-5	5-10	Over 10	Avg.
	60%	30%	10%	4

1. Indicate how you like the experimental uniform's general fit and comfort as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
5%	28%	34%	23%	10%

2. Indicate how comfortable the experimental uniform was to wear while performing duties as compared to your regular uniform:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
	37%	49%	11%	

3. Indicate the extent of wrinkling of the experimental uniform as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
5%	21%	27%	29%	18%

4. Indicate the condition of the uniform, relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
10%	43%	30%	17%	

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
	51%	37%	12%	

6. What type of dress uniform do you usually wear?

Standard Tropical 21% Standard Serge 29%

Double Knit 42% Other 8%

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 9% Standard Serge 13%

Double Knit 24% Experimental Uniform 46%

Other 8%

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO:
20:RW:jl
29-001-41

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF WOMEN'S SERVICE DRESS BLUE UNIFORM

NAME/RATE 55/45, polyester/wool, 11 oz. 53% response (21/40)

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JACKET SIZE WORN: _____

SLACK SIZE WORN: WAIST _____ INSEAM _____

SKIRT SIZE WORN: _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN 70

	1-5	5-10	10-15	Over 15	Avg.
NUMBER OF DAYS THE GARMENT WAS WORN	13%	25%	25%	37%	22

	0-5	5-10	Over 10	Avg.
NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	33%	55%	12%	6

1. Indicate how you like the experimental uniform's general fit and comfort as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
_____	23%	40%	25%	12%

2. Indicate how comfortable the experimental uniform was to wear while performing duties as compared to your regular uniform:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
____	55%	45%	_____	_____

3. Indicate the extent of wrinkling of the experimental uniform as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
_____	33%	33%	22%	10%

4. Indicate the condition of the uniform, relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
_____	13%	62%	25%	_____

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
_____	70%	30%	_____	_____

6. What type of dress uniform do you usually wear?

Standard Tropical 72% Standard Serge _____

Double Knit 28% Other _____

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 9% Standard Serge _____

Double Knit 36% Experimental Uniform 55%

Other _____

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)

DEPARTMENT OF THE NAVY
NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
21 STRATHMORE ROAD
NATICK, MASSACHUSETTS 01760

IN REPLY REFER TO

20:RW:j1
29-001-41

QUESTIONNAIRE

WEAR TEST ON NEW CONSTRUCTION OF WOMEN'S SERVICE DRESS BLUE UNIFORM

NAME/RATE 75/25, polyester/wool, 11.5 oz.

SHIP OR STATION _____

LENGTH OF SERVICE _____ AGE _____ WEIGHT _____

JACKET SIZE WORN: _____

SLACK SIZE WORN: WAIST _____ INSEAM _____

SKIRT SIZE WORN: _____

IDENTIFICATION NUMBER ISSUED FOR GARMENT _____

EVALUATION DATE: START _____ FINISH _____

AVERAGE TEMPERATURE WHEN GARMENT WAS WORN 70

NUMBER OF DAYS THE GARMENT WAS WORN	1-5	5-10	10-15	Over 15	Avg.
	10%	20%	30%	40%	20

NUMBER OF TIMES THE GARMENT WAS DRYCLEANED	0-5	5-10	Over 10	Avg.
	25%	60%	15%	7

1. Indicate how you like the experimental uniform's general fit and comfort as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
_____	18%	34%	33%	15%

2. Indicate how comfortable the experimental uniform was to wear while performing duties as compared to your regular uniform:

Experimental Uniform

Hot	Warm	Same	Cool	Cold
____	62%	38%	_____	_____

3. Indicate the extent of wrinkling of the experimental uniform as compared to your regular uniform:

Excellent	Very Good	Good	Fair	Poor
_____	30%	40%	20%	10%

4. Indicate the condition of the uniform, relative to its appearance after extended wear and repeated dry cleanings:

Excellent	Very Good	Good	Fair	Poor
	11%	55%	34%	

5. Indicate the condition of the uniform, relative to its fit after dry cleaning and pressing:

Excellent	Very Good	Good	Fair	Poor
	77%	23%		

6. What type of dress uniform do you usually wear?

Standard Tropical 75% Standard Serge _____

Double Knit 25% Other _____

If other, specify: _____

7. Given your choice, what type of dress uniform would you prefer?

Standard Tropical 15% Standard Serge _____

Double Knit 30% Experimental Uniform 55%

Other _____

8. Estimate how long uniform was worn outdoors as compared to indoors (hours):

Outdoors _____ Indoors _____

9. List any comments that you may have about the dress uniform you generally wear and the experimental uniform you have just tested. These comments may include suggestions or complaints about the style, comfort, appearance, etc.

_____

_____

_____

(Please continue comments on back.)